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ABSTRACT

The form and function of conditional structures in the speech of English speaking children between the ages of 2;6 and 8 years were investigated. Two types of conditionals were distinguished: reality conditionals and unreality conditionals. Data were obtained from audiotapes of the subjects under naturalistic conditions. A five-stage acquisition sequence was described in which the child's increasing ability to deal with abstract notions underlying more complex conditional types lead to mastery of further departures from present reality. From this developmental profile it was seen that the course of conditional development and comprehension generally followed a semantic rather than a grammatical progression. Developmental progress was viewed as the superimposition of successively more abstract layers onto this basic semantic function. (RW)

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WHAT ARE CONDITIONALS FOR?

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Until recently researchers have reported that children do not fully comprehend the conditional structure until about seven or eight years of age (Jakubowicz 1981; Emerson 1980 and Bates 1976). Further, earlier studies focussing on conditional reasoning in hypothetico-deductive tasks indicated that children are not successful with these tasks until adolescence (Kodroff and Roberge 1975, Taplin, Staudemeyer and Taddonio 1974, Kuhn 1977). However, both Limber (1973) and Bloom et al (1980) reported the appearance of if in complex sentences about the time of the child's third birthday, and French and Nelson (1981, 1982) as well as McCabe et al (1983) have found that young children seem to use conditionals appropriately.

In an attempt to resolve this conflict, i.e. children using a structure they apparently do not comprehend, this paper investigates the form and function of conditional structures in the speech of English speaking children between the ages of two-and-a-half and eight years.

The basic syntactic form for all conditionals in English is "If X, then Y". It is a complex sentence composed of a subordinate adverbial clause, the antecedent, which is marked with the subordinator if and a main clause, the consequent which may, but does not necessarily, begin with then. Within this basic structure, "If X, then Y", X is some type of condition on which Y depends. The relationship obtaining between these two clauses has been described as that of logical implication or entailment.

In English it is grammatical for these clauses to occur in either order (if the then is omitted) i.e. "If Jamie eats one more piece of pie tonight, he will surely be ill tomorrow" or "Jamie will surely be ill tomorrow if he eats one more piece of pie tonight."

The conditional system in English is both semantically and morphologically complex with the various types of conditionals being differentiated by the verb morphology in both the antecedent and consequent clauses.

Although a variety of analyses of conditionals have been proposed, given the crucial role of semantics in early language acquisition (Brown 1973, Bloom 1970 and Bowerman 1973) the semantically based classification of conditionals proposed by Schachter (1971) provides an ideal framework in which to view the acquisition process.

According to Schachter's model, conditionals are divided into two main groups, those signalling reality, "Reality Conditionals" and those which are used to refer to unreal events, "Unreality Conditionals".

Reality conditionals refer to events occurring or having

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occurred in the real world. These are present, past and generic conditionals. Present conditionals refer to events taking place at the time of the utterance; as in example 1 below. Past conditionals refer to events which may have taken place, (example 2) and generics are statements of timeless dependencies, as seen in example 3.

REALITY CONDITIONALS

1. Present: If I touch my eye, it hurts.
   If Jamie's in the kitchen, he's eating.
2. Past: If Jamie didn't eat the pie, Charles did.
3. Generic: If the tortoise has a runny nose, he sleeps in the house.

In Unreality conditionals there is some divergence from the real world, i.e. some notion of irrealis, and there are two groups: Predictives and Imaginatives. Predictives forecast the occurrence of some event in the real world in real time. However, as they refer to something which has not yet occurred, they are classified with the Unreality conditionals. The simple future tense appears in the consequent, as in example 4) below:

UNREALITY CONDITIONALS

PREDICTIVES

4. If Kate hears the music, she will dance.

IMAGINATIVES

Hypothetical:

5. If he ate all those doughnuts, he would be ill.

Counterfactual:

6. If I were a boy, I would have curls.
   (Subjunctive counterfactual)
7. If you had been awake, you would have heard the coyote. (True counterfactual)

As we can see from the Imaginative examples (5, 6 and 7 above) these express a clear divergence from the real world; this category includes hypotheticals and counterfactuals. Hypotheticals refer to situations which might occur but which are not being claimed to obtain in the real world at the time of the speech act, as in example 5 above. Subjunctive counterfactuals refer to situations which could not occur, as in example 6, and true counterfactuals refer to situations which could, but did not occur (example 7). In the counterfactual cases we interpret the antecedent as being strongly negated.

The various conditional types all share the basic "If X, then Y" structural description and entailment relationship; it is the auxiliary of either or both clauses which differentiates the individual conditional types.

Morphologically, the predictives are grouped with with the Reality conditionals and use the indicative mood (examples 1-4). Whereas the Imaginatives all use the conditional mood, signalled by would, in the consequent. Hypotheticals use the present subjunc-

tive or the past tense in the antecedent and would in the consequent. True counterfactuals use had + past participle (past perfect) in the antecedent and would + have + past participle (conditional perfect) in the consequent.

With this model as a framework, we will review experimental and naturalistic data to investigate how the conditional system is acquired in English. These results will provide not only a description of the developmental sequence, but they should also shed light on the influence of various factors on the general acquisition process.

Subjects and Procedures

Naturalistic data were collected in the form of a diary of my daughter Kate from age 12 months to 38 months, and two other children were audio taped for one-and-a-half to two hours every three months from ages 2,9 to 4,1 years in naturalistic play situations.

For the experimental data, tasks based on Schachter's framework were designed and administered to 28 children, ranging in age from two-and-a-half to nine years in age. There were four children in each age group: two, three, four, five, six, seven, and eight.

Task I: What If? Given that conditional types vary according to the auxiliary verbs in both clauses, the children were asked "What if?" questions with different auxiliaries to elicit different consequent responses. It was assumed that different auxiliary verbs in the response, triggered by the auxiliary in the antecedent question, reflected the child's morphological capabilities as well as his or her understanding of the function of different conditional types. For example, "What if you eat three ice creams?" might elicit a present tense response You get sick (a present or generic consequent) or the simple future You will get sick (a predictive consequent).

Task II: Bears and Pigs To test counterfactual comprehension and to elicit counterfactual consequents, the "What If?" paradigm was extended. The child was read The Three Little Pigs and The Three Bears. He was then shown a picture with a known result, e.g. the straw house which is blown down by the wolf. Then the child was asked a series of questions where each situation was varied in some crucial aspect. For example, "What if the straw house had been made of bricks?"

Task III: Pretend To investigate the child's comprehension of hypotheticals, he was asked to pretend to be or do something. The experimenter provided several model hypothetical conditionals, e.g. "If I were a duck, I would have feathers." Then the child was asked to pretend to be something and tell about it. If the child used a different syntactic form, a prompt was given, "Can you say it just like I did?"

Developmental Profile

The developmental profile which follows is an integration of the naturalistic longitudinal data and the results from the experimental tasks

Before a child produces his or her first conditional sentence, he demonstrates competence with a variety of linguistic and cognitive notions implicit in the basic conditional structure. Production of a conditional necessitates the juxtaposition and sequencing of two states or events as well as positing some dependency relationship between them. Additionally, the child must be able to conceptualize alternative possibilities. (In a conditional structure, the morpheme if signals the speaker's uncertainty as to the truth of the antecedent clause, i.e. it denotes her entertainment of the possibility of the antecedent's occurrence, thereby implicitly presenting the possibility of alternatives.)

Some of these components exist in earlier stages of acquisition, but we have clear evidence that the child can use them productively as a whole with his first morphologically unmarked conditionals. For Kate this occurred at 2,4:

8. Kate (2,4) pointing to a sheet draped over a jungle gym:
   Sit here/
   Fall down/

In this example, Kate is verbally juxtaposing in chronological sequence two unrealized states, where the consequent is causally dependent on the antecedent. The fact that Kate did not actually sit on the draped sheet reflects her understanding that the fulfillment of the antecedent is a possible rather than a necessary next event.

Hence, before Kate ever produced a morphologically marked conditional sentence, her spontaneous utterances reflected her understanding of the semantic concepts intrinsic to the basic conditional structure.

When the first spontaneous morphologically marked conditionals appear in the child's grammar, they are predominantly present conditionals, which refer to the ongoing and immediately present situation, and predictive conditionals. Example 9 is one of Kate's first present conditionals:

9. Kate (2,10) is pulling up her bathrobe as she is climbing onto the chair. Now she is seated:
   Mother: Leave your bathrobe down.
   Kate: It itches/
-> If I go like this, it itches, so I have to go like this/
   Mother: When does it itch?
-> Kate: If I put my bathrobe down, it itches on the chair, so I have to put my bathrobe up/

That same week, Kate produced the following predictive conditional:

10. Kate (2,10) hit me with a string bag
    Adult: Don't hit me/
-> Kate: I'll do it again if you laugh.

Both predictive and present conditionals usually occur spontaneously in the second half of the third year, or soon thereafter (2,6 -3,2 in this data). However, there is a great deal of variability in the twos' production and comprehension of the various conditional types. Whereas three of the twos began their conditional careers with present and predictive conditionals as Kate did, Matthew's first spontaneous conditionals were hypotheticals and often took the form <u>If I were</u>:

11. Matthew (2,9):
    If I were a zebra, then I have stripes/
    If I were a ant, I will scare you/
    If Amber die, Auntie would come/

However, these hypotheticals soon disappeared from Matthew's grammar in favor of predictive temporal clauses as in "When Katie comes over, I will share my candy". This variability during the initial stages of acquiring conditionals demonstrates the various means of entering a particular grammatical system, and the children's attempts to match their cognitive and linguistic capabilities appropriately.

Morphologically, all the twos can respond with the simple present or the simple future tense in the consequent although there are also some bare verbs. Two of the twos sometimes use <u>would</u> as in Matthew's example above, but they do not necessarily control the attendant semantic notion of hypotheticality, as Wynn's response in example 12 indicates:

12. Adult: What if you were a bird?
    Wynn(2,8) I'm not a bird, just a people/

In the data from the three-year-olds, a fluency with hypothetical conditionals is developing; they now can use the past tense in the antecedent and have <u>would</u> or <u>could</u> in the consequent. The threes are quite comfortable using hypotheticals to pretend to be something; however, in the tasks, they have some difficulty generalizing the notion of hypotheticality beyond the well defined area of "pretend". Threes do very poorly with the counterfactual comprehension tasks (only 36% of their responses were correct) and they also deny some hypotheticals and both subjunctive and true counterfactuals:

13. Adult: What if you ate three boxes of strawberries?
    Three: I already did/

14. Adult: What if you were a snake?
Three: I'm not a snake/
I'm Janine/
15. Adult: What if the Daddy Bear's porridge had been the Mother's porridge?
Three: (silence)
Adult: repeats question
Three: It's not/

In these examples (13, 14, and 15), we see that for the three-year-olds there is a tendency to retreat to, or remain with what is or was actually true, reflecting an inability to suspend reality temporarily.

From the threes' morphological proficiency, i.e. their ability to control the simple conditional morphology would + verb, it would appear that they are capable of hypothetical reference. However, when we closely examine their responses, we find that although they are gaining fluency with hypotheticals, it is only when given the specific directions to "pretend" that they are consistently capable of disengaging from reality.

The fours show a significant cognitive advance. They are successful in the hypothetical tasks and demonstrate a high level of comprehension on the counterfactual tasks where they are successful 92% of the time. Thus the fours, and all successive age groups, are capable of temporarily suspending reality. However, hypotheticals and counterfactuals are not yet morphologically distinguished; the fours use the simple conditional morphology would + verb for all Imaginative conditional consequent responses. The fours' cognitive leap is also reflected in their ability to generalize over real time. It is at four that French and Nelson (1982) found the first significant use of generic conditionals in response to questions asking, "What do you do when...?"

In the five- to eight-year-olds' task responses the developments are primarily morphological. In the sixes' responses to the task questions, the formal progress is in the appearance of the transitional unanalyzed morphemes: woulda and would've for counterfactual consequents, as in example 16:

16. Adult: What if the Mother Bear's porridge had been the Baby's?
Six: She woulda ate it all/

At six then, with the appearance of woulda and would've, counterfactuals are finally morphologically distinguished from hypotheticals.

It is not until eight, however, that the uncontracted perfect conditional consequent (would + have + past participle) appears, as in example 17:

17. Adult: What if the brick house had been made of straw?
Eight: It would have fallen down/ go kerplunk/

SUMMARY OF CONDITIONAL ACQUISITION SEQUENCE

I. ** present conditionals (2,6/3,2-3,9)	present
** predictive conditionals (2,6/3,2-	will
(individual variability at this stage)	would
II. ** hypotheticals specifically for pretend (3,0-	would
(some denial of other hypothetical situations)	
III.** hypothetical and counterfactual comprehension	
generics used in a few specialized contexts(4,0-	would
IV. ** distinctive morphology for counterfactuals	woulda/
appears in task responses (6,0-	would've
V. ** full counterfactual morphology appears	would have+
in task responses (8,0-	past partciple

Discussion

From this profile, it can be seen that the development of the conditional structure and its expanding role in the child's grammar reflect the child's growing cognitive ability to grapple with the increasingly abstract notions underlying the more complex conditional types. Each successive acquisition marks a further departure from the "here and now".

The conditional types which most children first use, predictive and present conditionals, are semantically the simplest. They both predict the occurrence of an unrealized contingency in the real world. Present conditionals are based in the ongoing situation, and predictives forecast a probable, but not necessarily immediately contingent event.

We should note here that the generics share the simple present verb morphology with present conditionals, and if we believed linguistic complexity to be the sole explanation for the acquisition sequence, we would certainly expect generics to appear simultaneously with present conditionals before age three. However, they do not occur until four, and this is attributed to the generic's increased semantic complexity and the two- and three-year-olds' inability to detach themselves mentally from immediate time and reality.

The next type of conditional to appear is the hypothetical. Hypotheticals also include the core notion of prediction of an unrealized contingency; futher they demand the temporary suspension of reality. The threes are first comfortable with hypotheticals when given the specific instructions to pretend, but it is not until about four that hypotheticality can be consistently generalized to other contexts. Generics, as we mentioned, also occur at four and demand suspension from specific instances of the referent situation,

implying a generalization over time.

Once again, from a purely morphological standpoint, we would expect past conditionals to appear even before hypotheticals, as past conditionals take the simple past in both the antecedent and the consequent clauses, but there is not one past conditional response in all the data.

The last type of conditional to be acquired is the counterfactual and it is by far the most complex, both semantically and morphologically. Semantically, not only must one suspend reality but past reality must be negated. Based on that mental negation of past events an unrealized contingency is then predicted. Even though counterfacuals are comprehended at four, morphology differentiating them from hypotheticals does not appear in the task data for two more years (in the sixes' data) when the transitional morphemes would'a and would've occur in the counterfactual responses. And it is not until age eight that the children commonly use the full conditional perfect morphology for counterfactuals.

Conclusions

From this developmental profile it can be seen that the course of conditional development and comprehension generally follows a semantic rather than a grammatical progression. The basic function of a conditional is to predict an unrealized contingency. This is the semantic core of the conditional structure. Developmental progress can then be viewed as the superimposition of succesively more abstract layers onto this basic semantic core.

In other words, it is the semantic complexity of a structure and the child's cognitive abilities to understand and manipulate those particular semantic notions and relationships that are responsible for the broadening role of conditionals in the child's grammar. However, the formal complexity of the morphological structure generally dictates the time schedule for the appearance of specific grammatical structures in the child's productive grammar.

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